



The **Best Disability Program** in the Army award was presented to Major General John Doesburg, SBCCOM Commander, by the Honorable Louis Caldera, Secretary of the Army, at the Pentagon on October 13th, 1999.

Selection to receive this award is based on exemplary Disability Program accomplishments to include hiring, training, and accommodating employees with disabilities and a dynamic and energetic community outreach effort. However, it is also based on a well-rounded approach to program management that includes the Individuals with Disabilities and Disabled Veterans employment programs, facilities accessibility assessment, and concerns related to the Workers' Compensation Program, the Army's Exceptional Family Member Program, and the Employee Assistance Counseling Center Program. All of these programs are found on every Army installation and, by their mission and purpose, are intricate to a successful Disability Program.



Members of SBCCOM's disABILITY Team: (from left to right, back row): MG Doesburg, Thomas Sekula, Dianna Stugen, Melanie Hoffman, Patricia Reeves, Eloise ("Lou") Conrad, Georgia Braun, Cecil Pennington, and (front row): Sandra Quinn, Robert Coen, Ronald Hinkle. Sandra ("Sam") Smith.

(continued on back of page)

The U.S. Army Soldier and Biological Chemical Command (SBCCOM), Aberdeen Proving Ground, MD has an employment population that includes 11% disabled employees and 4% targeted disabled employees. This percentage has remained stable for the past several years despite a decline in total employment within the Army and exceeds the Army and Defense goals of 7% and 2%, respectively.

SBCCOM has an effective and involved disABILITY Awareness Team. The goal of the Team is to educate the workforce about disability issues and to eliminate attitudinal, employment, training, and physical barriers to the disabled. To accomplish this goal the team has been instrumental in putting into place a number of special initiatives. Working with the SBCCOM Corporate Information Office, the disABILITY Awareness Team developed a web site. All official letters, policies, notices, and announcements are posted to the web. All types of disability issues ranging from the Team's mission statement, to explaining what the Department of Defense Computer Electronic Accommodation Program (CAP) is all about, to providing guidelines for Flexiplace work-at-home arrangements and explaining what reasonable accommodation entails.

Just a few of the on going programs that SBCCOM sponsors are highlighted here.

- **Project Employ** is a program designed to show employers, human resource managers, and individuals with cognitive disabilities that working one-on-one with those who suffer from brain disorders and mental deficiencies assists them in becoming gainfully employed.

- The **Command's Ergonomic Center** is an effort to fit the workspace to the person rather than the person to the work place. SBCCOM has taken an innovative approach to ergonomics. The Center was created to offer Command personnel an opportunity to look at and experience the newest developments in ergonomic equipment. Workers sit in, try out and use state-of-the-art computers, keyboards, chairs, screen enlargers for monitors, etc. to determine what is best suited for their specific needs. The Center's goal is to maximize productivity while meeting individual needs.

- A **partnership with Access Travel, Inc.**, was put in place to enable employees to travel seamlessly. The Command funds counseling services offered by Access Travel, Inc. Thus, employees can receive assistance whenever needed in planning for government related travel.

- SBCCOM supports a **Volunteers for Medical Engineering (VME) Team**. VME is a Maryland-based charitable organization that focuses on "one of a kind" devices that are designed and built specifically for individuals with disabilities or the elderly and that are not available to VME clients through commercial sources. The VME Team's mission statement is "to provide the independence of individuals with disabilities through the use of innovative engineering." On February 24th, 1999, the SBCCOM Team received approval to begin work on its first project. They are currently approved to work on six projects.

- The **SBCCOM hazardous weather policy** resulted when management recognized the serious danger individuals with physical disabilities faced in hazardous weather. The Command extended its emergency safety/evacuation program to include a safety policy during hazardous weather. Hazardous weather conditions are evaluated at the work site to determine if an employee will be at risk. Management is required to take action, e.g., pre-arranged arrival time and escorts, temporary alternate work site, pre-arranged work-at-home plans of action, etc., to overcome hazardous weather conditions. During instances when severe weather prevents a physically disabled employee from reaching his or her work place, the affected employee may submit a memorandum requesting administrative leave. The supervisor evaluates the facts taking into consideration safety/hazardous conditions. The employee may be approved for administrative leave in those cases where a potential safety hazard is verified.

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This journal is distributed to over 900 addressees throughout the Joint Services, industry, and academic R&D community and would be a good vehicle to publicize what is going on where you are. Please submit articles to Technical Director, Edgewood Chemical Biological Center, ATTN: AMSSB-RAS-C, Aberdeen Proving Ground, MD 21010-5424, or by electronic mail to the Corporate Enhancement Team at cet@sbccom.apgea.army.mil. All submissions are accepted at the discretion of the editor and are subject to editing. This journal is prepared for publication by the Corporate Enhancement Team:

Team Leader: Brenda C. Eckstein
Editor: Joanne N. Coale

Information Specialist: Joann J. Brucksch
Information Specialist: Regina F. Ryan

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- SBCCOM has participated in the **Maryland Unpaid Work Program** for 9 years, working very closely with the Maryland Division of Rehabilitation Services (DORS) to provide an opportunity for individuals with disabilities to gain on-the-job experience and training. It is SBCCOM's intent to employ these qualified individuals should the opportunity arise within the Command.

- The **Compensated Work Therapy (CWT) Program** assists disabled veterans in obtaining and maintaining competitive/supported employment by providing a structured, paid work experience fostering the development of good work ethics and behavior. Currently there are 38 CWT veterans working in SBCCOM.

Some of the greatest savings to the Command has been through these unpaid work opportunities and the DOD Computer Electronic Accommodations Program. Positions filled through unpaid work experience have included engineers, computer programmers, accountants, microbiologist, clerical, and blue-collar workers for savings in excess of \$750,000. Since 1998, the Command has saved more than \$14,000 through equipment and services provided by CAP.

The Army is justifiably proud of the accomplishments of SBCCOM's managers and employees. These accomplishments have set a standard of excellence while ensuring a diverse workforce that includes all peoples.

In October, members of SBCCOM's disABILITY Awareness Team, received a Commander's Medal from MG Doesburg. This was a special "Thank You" on behalf of the Commander as a result of the SBCCOM disABILITY Awareness Team receiving this prestigious award.

CONGRATULATIONS AND WELL DONE!

POC: Mr. Robert L. Coen, Commercial (410) 436-8213, DSN 584-8213, or email robert.coen@apgea.army.mil

Mr. Coen's participation on the disABILITY Awareness team has revolved around the formation and operation of the VME Team at SBCCOM. The SBCCOM VME team was formed in December 1998. The SBCCOM team consists of over 30 members from SBCCOM and the local Edgewood community. Team activities are centered with the Computer Aided Engineering Team. Mr. Coen is the team's Client Advocate.

NATICK BLAZES AHEAD WITH NEW DEVELOPMENTS IN FLAME PROTECTION

by Carole Winterhalter

Researchers at the Natick Soldier Center, part of the U.S. Army Soldier and Biological Chemical Command, are striving to develop affordable, flame-resistant uniforms for our nation's military personnel.

Flame and incendiary weapons are the oldest weapons known to man. According to a recent threat assessment conducted by the National Ground Intelligence Center, the use of incendiaries in battle dates back to biblical times. One of the first flame projectors consisted of a hollow tree trunk which had an attached basin full of glowing coals, sulfur and pitch. A bellows blew the flame in the form of a jet, setting fire to enemy fortifications. Other weapons include early firebombs hurled from catapults, incendiary arrows, and a material known as "Greek Fire." Its formula was kept secret and the exact composition was never identified. It would readily ignite other combustible materials and was difficult to extinguish.

Flame and incendiary weapons dominated the battlefield for many centuries until the introduction of gunpowder in the fifteenth century. Flame and incendiary weapons have been used in virtually every war since that time, and are used in current conflicts today. Protection from these threats, their secondary hazards, and accidental fires that occur on the battlefield are highly desired by today's military users.

Currently, U.S. Army tankers and aviators from all services are authorized to wear flame resistant clothing systems made from Nomex fiber. These materials, which char rather than melt, provide durable flame protection for the life of the garment because the fiber is inherently flame resistant. The tankers wear a solid green or tan clothing system depending on where they are deployed. A special



The thermal manikin engulfed in flames above is used to test and evaluate military flame-resistant clothing systems.

dyeing and printing technique was developed through Natick and industry partnership to provide the U.S. Army aviators with a woodland camouflage printed version.

While these clothing systems receive high user ratings, they are expensive and not affordable to all military users. The infantry currently uses a nylon and cotton blend Battledress Uniform (BDU) and highly desires flame protection, but Nomex uniforms are too expensive to issue to every ground soldier.

Natick is actively addressing these cost based user needs and has established a Flame and Thermal

Team to conduct research and development in this area. The objectives of the team are threefold: 1) establish flame and thermal performance requirements for military clothing systems; 2) demonstrate a flammability test methodology that simulates military flame and thermal hazards; and 3) develop a flame protective clothing system that is 30 to 50 percent less expensive than existing Nomex based systems.

For many years the military used an outdoor fire pit to test and evaluate developmental flame protective clothing systems. The outdoor facilities were not very reliable because their use was dependent on the prevailing weather conditions, and it was difficult to maintain a constant thermal flux. Today the military uses a state-of-the-art instrumented manikin and an environmentally controlled chamber. The manikin is equipped with 122 sensors and can predict the percentage of second and third degree body burns. In the United States, there are only two sources for this DuPont based testing technology: DuPont's Richmond site and North Carolina State University at Raleigh. This method is rapidly becoming accepted as a standard to evaluate industrial and fire service protective clothing. Based on a recent Natick evaluation, this method is being recommended for adoption as the new military standard, in addition to two bench scale tests, to be used to develop, test and evaluate military flame protective materials and clothing systems.

The performance of existing military clothing systems was recently established using this new method. Hundreds of burn tests were conducted on both tanker and aviator systems beginning with summer weight uniforms, i.e. tanker coverall or air crew BDU with T-shirt and briefs, and adding clothing layers up to the winter weight configuration consisting of long underwear, coverall, insulated overall, and jacket. All clothing items, with the exception of the cotton T-shirt and briefs, were made from Nomex. The pass/fail criteria for the test, which is no more than a 20 percent body burn, is based on military criteria. Each clothing system provided excellent flame protection, and as expected, the protection time of each system increased with each additional layer

of clothing. The summer weight systems provided three seconds of protection, whereas the multiple layered winter ensembles provided ten seconds of protection.

Over the next few months the detailed results of these system burn tests as well as recommendations for flame and thermal performance requirements and the flammability testing protocol will be presented to the military user community for review, discussion and approval.

The Flame and Thermal Team has already succeeded in establishing flame and thermal performance requirements for military clothing systems and has demonstrated flammability test methodology that simulates military flame and thermal hazards. The team plans to reach its final objective of developing less expensive flame protection for our nation's service members by 2001.

NATICK'S FLAME AND THERMAL TEAM:

Carole Winterhalter
Il Young Kim
Calvin Lee
Rosemary Lomba
Dave Tucker

TEAM OBJECTIVES:

- Establish flame and thermal performance requirements for military clothing systems
- Demonstrate a flammability test methodology that simulates military flame and thermal hazards
- Develop a flame protective clothing system that is 30 to 50 percent less expensive than existing Nomex-based systems.

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BOOK SMART

by Jane Benson

New computer display gives troops another tactical edge

A new computer display called the Military E-Book could dramatically enhance the capabilities of soldiers in the field. The E-Book acts as a document viewer and a terminal that receives data and graphics. The display, which can interface with a body-worn computer, will give soldiers the ability to perform computational operations, store data, and communicate directly and quickly with one another, as well as view maps, orders, and troop movements.

Once an image has been loaded onto the ultra low-power, wireless, interactive document viewer, it can remain indefinitely, even after power is removed. In addition, since the product is lightweight and only about 5 by 7 inches in size, it will not significantly increase the soldier's load. The product is being developed by the U.S. Army Soldier Systems Center (Natick), the Defense Advanced Research Projects Agency (DARPA), as well as two private industry partners, Honeywell and Kent Displays, Inc.

According to Henry Girolamo, Natick Program Manager/DARPA Agent, the display can be carried on the belt, in a cargo pocket, or on load-bearing equipment (LBE). The display will be part of a wearable computer system, which is being developed by DARPA.

The document viewer is visible in bright sunlight. Since it produces no light emissions at night, it does not pose a threat to soldier security and safety. Soldiers will wear special goggles to read the display at night.



According to Girolamo, "The zero power document viewer will be a beneficial and valuable soldier system peripheral that will allow a warfighter to wirelessly share, through their wearable C4I system, alphanumeric and graphical data and, because there is no light emission, light management will be possible in night operations."

Girolamo stated that the product will be tested first by U.S. Army Military Police. The Army's Special Operations Forces have also expressed interest in

the product. The document viewer would also prove useful to Air Force pilots, who would be able to use it to access maps and orders and communicate with others, even after their plane had been shot down.

Additional capabilities may be added in the future, including the ability to display pages from a memory card, making the viewer autonomous.

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PM-NBCDS AND HRED GO HAWAIIAN

A LOHA!!! That was the greeting PM-NBCDS and HRED personnel received as they arrived at the designated test site. As you might guess this “hardship” trip was **NOT** Fort Polk, LA, or Fort Hood, TX, but Schofield Barracks on Oahu in the Hawaiian Islands. Skip Richardson of the Joint Service General Purpose Mask (JSGPM) Team in the Office of the Project Manager, Nuclear, Biological and Chemical Defense Systems (PM-NBCDS) and Dan Barker and SFC William Harrop of the Human Research and Engineering Directorate (HRED) in the U.S. Army Research Laboratory, volunteered to travel to the test site. The site was chosen to conduct the Speech Intelligibility test on different Chemical-Biological (CB) Protective mask systems and mask systems with SINCGARS.



domestic CB mask systems. The purpose of the evaluation is to determine design characteristics that maximize human system performances. The data collected will be used to model or predict effects of future mask design characteristics, in particular for the JSGPM.

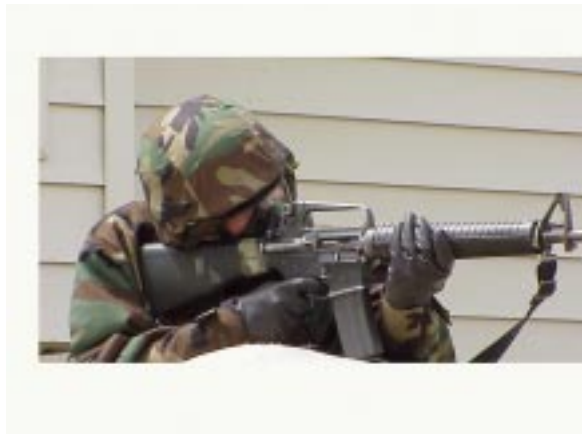


The program was started in February 99 and is expected to be completed in January 00 with a detailed comprehensive report. Although there are still many other items that can be tested, this 1st phase of testing is complete. In this phase, besides the speech intelligibility test, we also tested sight compatibility, rifle firing, and mobility-portability course. In the sight compatibility evaluation conducted at APG, MD, and Quantico Marine Corps Base, VA, numerous sighting systems and mask interfaces were evaluated and data collected to determine the eye relief, field of view, and compatibility of the mask systems with the sighting devices.



This testing is a sub test of the Mask Baseline Compatibility Evaluation testing initiated by the JSGPM team and being conducted by HRED to establish a database on several mask parameters on current fielded foreign and

In the rifle firing evaluation conducted at APG, MD, an M16A2 rifle with a laser beam hit device was used to determine the number of hits out of 18 targets for comparison to the no mask condition.



In the mobility-portability course evaluation conducted at APG, MD, an evaluation of the time it took to complete an obstacle course was used to determine the performance degradation of the various masks versus a no mask condition. Data was collected on each individual obstacle as well as the entire course.

In the last test conducted, the speech intelligibility test, Skip provided technical support to SFC Bill Harrop and Dan Barker, from 13 to 24 Sep using 12 soldiers from the 71st Chemical Company of the 29th Light Infantry Division stationed at Schofield



Barracks. During this test approximately 800 individual tests (400 face to face and 400 with the AN/ANC-127 squad radio with handsets (SINCGARS) were conducted with speaker test subjects in ten different configurations using nine different US and foreign masks (one configuration is no mask) communicating the Modified Rhyme test. Listeners wore a PASGT helmet, JS-LIST hood, the M40 butyl hood or only the M40 hood when listening and responding.



During the entire test only military test subjects were used from the Army and Marine Corps. Data collected was supplemented with test subject questionnaires which allows the test subjects to comment on the intangibles that raw empirical data can not measure such as level of comfort, or feeling of claustrophobia. These comments can also help isolate the cause of a particular degradation problem such as vision, breathing, mobility etc.

Data is being tabulated and analyzed into discrete elements. This method enables mask designers to pinpoint problem areas for each mask system, problems that should be avoided with the JSGPM. The data also enables mask designers to pinpoint good features of mask systems and therefore incorporate these features into new masks systems.

The test program has already proven to be very beneficial as preliminary data was presented to the JSGPM Requirements IPT which helped them better understand the real world problems and develop more meaningful Critical Operational Issues and Criteria for the testing of the JSGPM.

As far as the trip to paradise, no one is saying very much, so that means either they had a wonderful trip and don't want to let the secret out or they had a terrible time and would rather not talk about it. You be the judge.



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IT'S SHOW TIME

With COL Stephen Reeves, the Project Manager for Nuclear, Biological Chemical Defense Systems (PM-NBCDS) producing and starring and Mr. Rick Decker (System Manager for the Joint Service General Purpose Mask) as stage manager and director, PM-NBCDS's version of What's My (Product) Line? began taping at 1300 hours on 18 August 99. The stage was near the tree line at the south end of the runway to look like the open fields of somewhere in the European Theater (Get It?). With all in place, the taping went smoothly, but the planning and preparation that occurred before took a tremendous effort by a number of people.

It all started when the U.S. Army Project Manager for Nuclear, Biological Chemical Defense Systems (PM-NBCDS) was tasked to present an NBC Defense Systems equipment display and simulated MOPP IV live-action scenario for the American Forces Information Services and Armed Forces Radio Television Service.

When COL Reeves received this task, his first call was to Rick. Who better to orchestrate the show? Using his outstanding technical knowledge, and tremendous interpersonal skills, combined with determination under difficult conditions, he was instrumental in making the event a tremendous success. He was diligent and thorough and truly aware of the importance of presenting a professional display.

The extensive display and scenario required the support of a number of individuals. Rick needed a Fox vehicle. His first call was to the Wheeled Track and Recovery Department within the Ordnance Center and School to investigate the availability of an M93 Fox. With an extremely short notice, SSG Barry L. Nesbitt and SFC Benito



Fox vehicle in an operational scenario



Matanane provided a Fox vehicle and provided clear and concise technical information on the function and operation of the vehicle in an operational scenario.

He called PM-Soldier and LTC Steve Pinter and Ms. Gloria Barrett quickly supported him by sending George Costas from the Natick Soldier Systems Center to provide on site technical expertise in Chemical Biological (CB) protective equipment. George assisted in the preparations and provided clear and concise technical information on such items as the Joint Service Light Integrated

Suit Technology, Multi-Purpose Overboot, and other CB Clothing. Dan Barker and SFC William Harrop of Human Research and Engineering Directorate of the U.S. Army Research Laboratory provided on site human factors technical expertise in Chemical Biological protective clothing and equipment. They provided clear and concise technical information on such items as the Masks, Joint Service Light Integrated Suit Technology, and other CB clothing and equipment and its physiology effects on the individual soldier to perform in an operational scenario.

Assistance was also provided by the JSGPM team, other System Managers, and SFC Lester Ashley and Sgt Michael Walker to set up displays of the other PM-NBCDS products.

Mr. James T. (Tom) Faulkner, Mr. Conrad D. Johnson, and Mr. Michael E. Barnette, documented the event in still and video media for future use in Command publications, exhibits, displays and media presentations. During the entire process, despite an extremely hectic schedule, Tom constantly kept the PM-NBCDS representatives appraised of the progress and provided suggestions in setting up shots and seeing the value of a particular viewing perspective and composition of the shots.

Ms. Brenda C. Eckstein and Ms. Joann J. Brucksch documented the event for future use in Command publications, exhibits, displays and media presentations.

Mr. James Allingham made all the arrangements and coordination required to make the event occur in such a professional manner.

With the cast of many, it took an exceptional effort to make it happen so well. Even the weather cooperated with a beautiful sunny day. I don't know if Rick has connections there also.






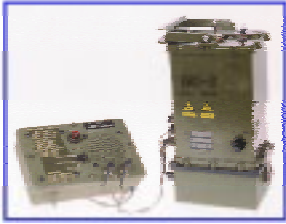
COL Reeves was extremely pleased on how well the event went. Thanks to all those who contributed their time and effort. Teamwork does work. Now on to Broadway.

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Fieldings

 <p><i>M56 Smoke Generator</i></p>	<p>340th Cml Co., Ft. Hood, TX</p> <p>POC: Randal H. Loiland AMSSB-PM-RSM-M, DSN 584-2806</p>	<p>Feb-Mar 00</p>
 <p><i>M157A2 Motorized Maintenance Work Order (MWO) Retrofit Kit</i></p>	<p>45th Bde, OKARNG,</p> <p>POC: Janice A. Nordin AMSSB-PM-RSM-V, DSN 584-2838</p>	<p>Jan-Feb 00</p>
 <p><i>M157A2 Mechanized Maintenance Work Order (MWO) Retrofit Kit</i></p>	<p>135th Inf., Illinois Army National Guard 449th Inf., Texas Army National Guard, Ft. Hood, San Antonio, and Laredo, TX 218th Inf., South Carolina Army National Guard 48th Bde., Georgia Army National Guard</p> <p>POC: Janice A. Nordin AMSSB-PM-RSM-V, DSN 584-2838</p>	<p>Dec 99 Feb 00 Feb-Mar 00 Mar 00</p>
 <p><i>Light Vehicle Obscuration Smoke System (LVOSS)</i></p>	<p>Various Inf/MP Cos., Ft. Bragg, NC Various MP Cos., Ft. Hood, TX</p> <p>POC: Henry St.Pierre AMSSB-PM-RSM-R, DSN 584-5527</p>	<p>Feb 00 Mar 00</p>
 <p><i>M93A1 FOX/MICAD</i></p>	<p>National Training Center, Ft. Irwin, CA PM NBC Defense, APG, MD Ordnance School, APG, MD</p> <p>POC: MAJ John M. O'Regan AMSSB-PM-RNN-T, DSN 584-6551</p>	<p>Mar 00 Mar 00 Mar 00</p>

 <p><i>M40A1/M42A2 Mask</i></p>	<p>Michigan NG, Detroit, MI 70th RSC, Yakima, WA Ohio NG, Columbus, OH Alaska NG, Anchorage, AK Maryland NG, Baltimore, MD Virginia NG, Newport News, VA North Carolina NG, Charlotte, NC Kansas NG, Ft. Riley, KS</p> <p>POC: MAJ John M. O'Regan AMSSB-PM-RNN-M, DSN 584-6551</p>	<p>Nov-Dec 99 Nov-Dec 99 Nov-Dec 99 Nov-Dec 99 Feb 00 Feb 00 Feb 00 Apr 00</p>
 <p><i>M45 Aircrew CB Protective Mask</i></p>	<p>Aviation School, Ft. Rucker, AL Chemical School, Ft. Leonard Wood, MO 3rd ID, Ft. Benning, GA 986th Med Bn, Lawrence, GA 82nd AA, Ft. Bragg, NC North Carolina NG, Raleigh, NC South Carolina NG, McEntrye, SC 3rd ID, Hunter Army Airfield</p> <p>POC: MAJ John M. O'Regan AMSSB-PM-RNN-M, DSN 584-6551</p>	<p>Jan 00 Jan 00 Feb 00 Feb 00 Mar 00 Mar 00 Mar 00 Apr 00</p>
 <p><i>M48 CB Apache Aviator Mask</i></p>	<p>Fieldings delayed until further notice</p> <p>POC: MAJ John M. O'Regan AMSSB-PM-RNN-M, DSN 584-6551</p>	
 <p><i>M22 Automatic Chemical Agent Alarm</i></p>	<p>1st Bn, 1st SFG, Okinawa, Japan 1st Bn, 10th SFG, Stuttgart, Germany 82nd Airborne Div., Ft. Bragg, NC</p> <p>POC: MAJ John M. O'Regan AMSSB-PM-RNN-A, DSN 584-6551</p>	<p>Nov 99 Dec 99 Mar 00</p>

END ITEM UPDATES:

NBC DEFENSE EQUIPMENT

Reconnaissance, Detection, and Identification –

M9 Paper Shelf Life Extension from 6 to 8 Years – The M9 Paper Chemical Agent Detector shelf-life study was conducted and successfully completed. A grand total of 349 M9 Paper rolls ranging in age from 6 to 10 years from different storage sites were tested with agents VX, HD, GD, scuff resistance, and peel strength. They all passed agent and peel strength tests. Eleven samples aged 8.5 and 9.0 years did not pass the resistance test. The Detection Kits Configuration Control Board decided to extend the M9 Paper shelf life from 6 to 8 years and the Engineering Change Proposal was approved on October 1st.

Automatic Chemical Agent Alarm (ACADA), M22 –

- In October, packaging tests were conducted in accordance with ASTM-D-4169 distribution cycle 18 (Government Shipments) on three M88 Automatic Chemical Agent Detectors at Tobyhanna Army Depot. The items tested were in Graseby Ltd. new packaging design using a TYVEK inner wrap. Test items were exposed to climatic hazard, manual handling, stacking, environmental hazard, and vibration (loose cargo) rail switching and radiation leakage test. The detectors and their packaging successfully passed all testing. This test validates that Graseby's new design will meet the Level A shipping requirements of MIL-STD-2073. The new pack will meet all requirements for worldwide shipments without restrictions in the Military shipping environment.

- A prehearing was held with the U.S. Nuclear Regulatory Commission (NRC) to discuss the Army's request for an Exempt License. Discussions centered around the regulations, which the NRC cited as the reason for rejecting the Army's request. An alternative approach was discussed with the NRC, which would amend the current licenses but would incorporate some of the advantages of an Exempt License. The Army in parallel with the hearing process will pursue this approach.

Simulators for M256A1 Detector Kit – In September, the SBCCOM(RI) Detection/Decon Kits Team, in association with TACOM-Rock Island Procurement, awarded a 5-year requirements contract for the M28, M29, and M256A1 Chemical Detector Simulators to Canadian Commercial Corp. Canadian Commercial Corp. will subcontract 100 percent to Anachemia Canada Inc. The 5-year estimated dollar value of the contract is \$1,200,000.00. The Simulators are used for training on the M256A1 Chemical Agent Detector Kit.

Chemical Agent Monitor (CAM) –

- Two new CAM+ detectors were delivered by Graseby to the CW IRP chemical team in September for upcoming chemical agent tests. The new instruments are claimed to have the capability to detect chlorine, phosgene, and hydrogen cyanide in addition to the chemical agents that the CAM already detects.

- We are starting the procurement package for a programming tool to be used with ICAMs built with Intellitec's new printed circuit board. The tool will allow the ICAM's program to be modified to delete agents, add different agents, and add new agents or toxic chemicals. The contract will be sole source to Intellitec, as they have the expertise with the software used on this board. This program will support select users with special needs or uses for the ICAM.

Joint Warning And Reporting Network (JWARN) – JWARN WIN training was conducted at APG-EA in September. Students were provided training in NBC Analysis, HPAC, VLSTRACK, EMIS, and NBC Toolbox. The training was very successful. Surveys were collected to improve the training and documentation supplied.

Short Range Bio Standoff Detection System (SR-BSDS) – A favorable decision to continue the SR-BSDS as a part of the Joint Biological Remote Warning System (JBREWS) Advanced Concept Technology Demonstration was reached at a briefing conducted for the Defense Threat Reduction Agency at the Joint Program Office for Biological Defense on October 1st. The decision was based on the highly favorable results of the independently conducted and scored trials in July 1999 at Dugway Proving Ground.

Individual Protection –

Biological Warfare Mask – In September, a U.S. patent (#5957131) was issued for a biological warfare mask and assigned to the Secretary of the Army. The mask provides a military level of protection against biological agents in a half mask configuration, thereby avoiding the disadvantages of a full face mask such as restricted vision, heat buildup, weight, and feeling of enclosure. The mask can also provide protection from hazardous vapors. This invention was the result of an SBCCOM skunk-works project performed in 1996.



M40/M42 Series Mask –

- Reclaimed parts from disassembly of protective masks provide efficient, effective means of maximizing available resources. A total of 34,300 sets of clear and neutral outserts obtained through a reutilization effort at Pine Bluff Arsenal have been issued to mask users. These reclaimed sets represent a \$284,433 cost avoidance. Future requirements will be filled through new procurement as reclaimed sets are now depleted. A 5-year long-term contract for new outserts was awarded in September.

- Pine Bluff Arsenal in coordination with SBCCOM-Rock Island and PM-NBC M40 Team designed and manufactured two new microphone testers. The new testers will be used by Pine Bluff Arsenal to test the M1 Aircrew and the M42A2 Mask detachable microphones. The new testers will enable Pine Bluff Arsenal to test the microphones to the specific sound pressures and frequency requirements of each microphone.

- The M40 Mask Team determined that the faceform packaging support is no longer required for use in the field and should be discarded when a new mask is issued. This action saves the field approximately \$96,000 per year based on previous years' demands. A Maintenance Advisory Message notifying users of discontinued use was released.

- TACOM-Rock Island, teaming with SBCCOM-Rock Island, awarded a 5-year requirements contract for Laser Ballistic Outserts to Mine Safety Appliances Co. The Laser Ballistic Outsert, in addition to providing ballistic protection, will also protect the user's eyes from incoming laser light. This is a first time buy for this item, an accessory for the M40A1 and M42A2 series protective masks. This long-term contract will facilitate shortened administrative lead-time and quicker availability to the field.

M45 Mask – TACOM-Rock Island, working as a team with the PM-NBC Defense M45 Team, exercised one option modification for 1,921 additional M45 Land Warrior CB Masks at a value of \$455,248.58. Two

modifications under the IDIQ portion of the contract for spares totaled \$248,382.43. The spare faceblanks, awarded for \$99,716.91, were awarded at the pre lens reopener price with downward adjustment only.

AN/UDR-13 – The contractor, Nuclear Research Corporation, identified a microprocessor to replace the one that has been used. The manufacturer discontinued the original microprocessor. The new processor is similar in function and will cause the least amount of circuit board modification.

Collective Protection –

M28 Collective Protection Equipment –

- In October, representatives from Natick and Rock Island worked together to segregate and classify M28 CPE stock currently stored at the Ogden Depot. This effort was required to bring the inventory at Ogden into a packaging configuration suitable for Army needs. This joint team effort saved depot charges in excess of \$40,000.

- In October, the first delivery of the Hospital Unit Base (HUB) was received at Ogden, UT, that had all the Engineering Change Proposals applied from Intellitec on contract DAAE20-95-C-0381. This HUB is the current configuration. The HUB will support the Chemically Protected Deployable Medical Systems (CPDEPMEDS). The contract is now fully funded for the remaining 9 HUBs to be repackaged to best fit the needs of the user and logistically will be more efficient and less costly to manage by the item manager and the depot.

M93 Gas Particulate Filter Unit (GPFU) – In September, the Collective Protection Materiel Team, in association with TACOM-Rock Island, awarded a long term, 5-year requirements contract for the M93 GPFU. The successful contractor is Hunter Manufacturing Company. The first delivery order was awarded on the same day for 45 each M93 GPFUs for a total amount of \$726,480. The potential contract amount is \$2,855,130 for five years.

M95 Gas Particulate Filter Unit (GPFU) and M84 GPFU, Cover Access, Adapter Air Duct – In September, the Collective Protection Materiel Team, in association with TACOM-Rock Island, awarded a Long term, 5-year requirements contract for the M95 and M84 items. The successful contractor is Parmatic Filter Corp. The first delivery order was awarded on the same day for 24 each Cover Access and 78 Adapter Air Duct for a total amount of \$38,394.00. The potential contract amount is \$1,066,453 for five years.

Decontamination –

M17 Decon Apparatus –An M17 Lightweight Decon System was provided to the Aberdeen Test Center to support the decontamination testing of power generator sets 3KW, 30KW, and 60KW. The tests were conducted in support of an operational requirement to determine if the new power generators could be successfully decontaminated with soapy water.

Sorbent Decontamination Systems (SDS) – In September, the Edgewood CB Center's Institutional Animal Use and Review Committee approved, pending suggested changes, a protocol to investigate the efficacy of a new sorbent decon material as a potential skin decontaminant for VX and HD. This study, should the new decon sorbent prove effective, could lead to additional work and future FDA approval status for the sorbent decon.

Joint Modular Decontamination System – Production contracts for the M21 Decontaminant Pumper and M22 High Pressure Washer were awarded to the CENTECH Group, Inc., at the CENTECH facility in Hugo, OK

SMOKE SYSTEMS

Coyote Smoke Generator, M56 – The M56 production contractor, Robotic Systems Technology (RST), has completed the retrofit at Fort Bragg of all original fuel tanks with the improved fluorinated tanks. This effort comprised the M56s located at both the 21st and 101st Chemical Companies, and all of the warranty claims from Fort Bragg are now closed out.

Wolf Smoke Generator System, M58 –

- In September, TACOM (PM M113) signed and approved the Memorandum of Agreement between PM M113 and SBCCOM (PM Smoke/Obscurants). Under this agreement, PM M113 agreed to provide the same level of support to the M58 System Improvement Program that was provided to the basic M58 (i.e. excess M113A2, A3 packages, logistical support, etc.).

- The Deputy for Acquisition Readiness approved the updated Acquisition Strategy for the M58 Family of Vehicles in September.

Mid-Sized Riot Control Disperser (M37) – The M37 Milestone III briefing was successfully conducted in September. BG J. A. Mangual, SBCCOM's Deputy for Acquisition and Readiness, the Milestone Decision Authority, approved the Type Classification-Standard and gave authorization for the production contract to go forward.

M90 Smoke Grenade – The FY99 M90 Smoke Grenade production was completed by Pine Bluff Arsenal with a final lot of 5,500 grenades. The total grenade production for FY99 was approximately 15,000 grenades. Available grenades will be fielded to units with LVOSS hardware per the approved plan. Contracting for FY00 production of 60,756 grenades has begun.

TECHNICAL MANUAL (TM) SHIPMENTS

Members of SBCCOM's RDA Enterprise recently helped expedite the shipment of M40A1/M42A2 Chemical Biological Mask TMs and arranged for the reprinting and shipment of Improved Chemical Agent Monitor (ICAM) TMs. With the cooperation of the U.S. Army Printing Agency representatives, printing priorities were elevated. As a result, 3,000 copies of TM 3-4240-346-20&P, Unit and Direct Maintenance Manual for Chemical Biological Masks (including RPSTL) were shipped to two depot sites in time for October 1999 fieldings. Likewise, 1,000 copies of TM 3-6665-343-23&P, Unit and Direct Support Maintenance Manual for Improved Chemical Agent Monitor (including RPSTL), are being printed and will be shipped to a designated depot in time for a January 2000 fielding. This resulted in a substantial cost savings because local reproduction was not required.

PRODUCT DATA MANAGEMENT SYSTEM

A Natick Soldier Center Team identified funding to be used for the migration of their Engineering Data from the current JEDMICS system to the Edgewood CB Center's Product Data Management (PDM) system. When fully completed, the Edgewood and Natick sites will operate with a single virtual PDM system maintained

and operated from Edgewood at considerable cost savings to the Command. The transfer will begin shortly and no interruption of services is anticipated.

CHEMICAL MATERIEL STOCKPILE RELIABILITY PROGRAM (CMSRP) DATABASE

The Chemical Defensive Equipment (CDE) Surveillance Team accepted delivery of the final version of the new Chemical Materiel Stockpile Reliability Program (CMSRP) database developed by LOGICON. The database will facilitate the automated processing and reporting of quality and reliability assessments of both wholesale and field CDE data.

STANDARDS/SPECIFICATIONS:

We reviewed a draft proposal for ASTM Committee D26 regarding a revision to ASTM D3698, Standard Practice for Solvent Vapor-Degreasing Operation.

We reviewed a draft revision for ASTM Committee D10 of ASTM D3654, Test Method for Holding Power of Pressure-Sensitive Tapes. The proposed revision is similar to the version now being approved by the Common Market Standard Body and the United States Tape Group and is also under consideration by both the Japanese and Chinese Standard groups.

Work continues on the draft standards to replace packaging barrier materials and bags. The next step is a Main Committee ballot. In the meantime, we received a request to re-activate the specification for MIL-B-117, Bags, and MIL-B-121, Flexible Barrier Material. We have concurred with the re-activation.

FACILITIES

Advanced Aerosol Wind Tunnel Capability. In response to a need to validate the performance of aerosol inlets for biodetection in order to meet the range of Joint Service requirements, the Aerosol Sciences Team has established, in house, a unique capability to perform aerosol wind tunnel experiments at wind speeds up to 60 mph. The new capability was demonstrated in measurements on Joint Program Biological Detection Systems brass board hardware for the trigger and collector inlets.

FORCE PROVIDER TRAINING AND TEST FACILITY

AMC and FORSCOM in partnership formally open the Force Provider Training and Test Facility on November 29th, JRTC, FT Polk, LA. The Force Provider Training and Test Facility will serve as a training facility for troops, LOGCAP, and LARs rotating through JRTC and FT. Polk. In the spirit of acquisition reform, the facility will also be used to test and evaluate doctrine and current and new base life support systems and technology that will improve the quality of life support for our soldiers while enhancing readiness in the field. The facility as a test forum will help AMC reduce program costs and field systems to our soldiers quicker. The Force Provider Training Module will be named the "Tom Sullivan Training Module."

HELP LINES/TOLL-FREE NUMBERS

	<i>Telephone No.</i>	<i>fax no.</i>
Chemical Maintenance	Germany 0130810280 Korea 0078-14-800-0335 CONUS 1-800-831-4408	1-410-436-3912 (TOLL CALL)
Smoke/Obscurants	1-888-246-1013	1-410-436-2702 (TOLL CALL)
CB Helpline (NONEMERGENCY TECHNICAL ASSISTANCE)	1-800-368-6498	1-410-436-0715 (TOLL CALL)
Environmental Quality	1-410-436-6588 (TOLL CALL)	1-410-436-8484 (TOLL CALL)
Operational Forces Interface Group (OFIG)	1-508-233-5341 (TOLL CALL) DSN 256-5341	

BRIEFS

BW IMPROVED RESPONSE PROGRAM (BW IRP). In September, MG Doesburg signed out a formal request to the Maryland Army National Guard for personnel support for the Neighborhood Emergency Help Center (NEHC) BW IRP component test, scheduled for Nov 99 at SBCCOM. Per this request BG(P) Steven Blum, the Assistant Adjutant General for the Maryland National Guard, has agreed to provide roughly 60 Guard personnel to support the NEHC test.

SBCCOM OPINION SURVEY. An SBCCOM Opinion survey was made available to the workforce on the internet on Monday, 18 October. As of Thursday, 21 Oct, 640 out of approximately 2,400 internet users have responded. Interviews to supplement the survey have been initiated at both the Natick and Edgewood sites. Target is to interview a randomly selected 10% of the workforce. Survey interview results will be briefed to the Command Board of Directors as well as the workforce and will be translated into an action plan for the Command.

SMOKE ON COMBATANT ASSAULT CRAFT (CAC). PM-Smoke/Obscurants has been funded to design and demonstrate a rapid obscuration smoke system for the CAC using standard Army smoke dischargers and grenades. A kick-off meeting for this effort was held in October at the Navy Combatant Craft Department. Space claims for the smoke dischargers and an operational concept was established at the meeting. In addition, data requirements to obtain Navy Weapons and Explosive Safety Review Board approval and the estimated additional funding needed to generate that data were reviewed. PM Smoke will build a prototype smoke system and conduct initial performance testing at APG. Follow on operational testing at a site to be determined is planned.

AIR OPERATING PERMIT ISSUED. The Maryland Department of the Environment recently issued Aberdeen Proving Ground an Air Operating Permit as required by Title V of the Federal Clean Air Act. The permit encompasses only federally mandated air emissions criteria and included several active Edgewood sources.

EXPERIMENTAL FABRICATION SHOP/NEW MOA

Within the Edgewood CB Center, we have an outstanding capability (personnel and equipment) in our Experimental Fabrication (Ex Fab) Shop. Throughout the organization, it is a normal occurrence to hear about how Experimental Fabrication played or is playing a key role. Perhaps the greatest example of this is the fabrication of the Biological Integrated Detection System (BIDS). By the way, Ex Fab continues to work BIDS but now on the P3I version.

In recent months, in order to make the shops more competitive, we dramatically reduced their overhead rate. This should generate a greater volume of business and thereby allow us to expand our capabilities. Secondly, we've made an organizational change, which more closely links Experimental Fabrication and our Rapid Prototyping capabilities.

On October 12th, we took an important strategic step, when the Commander of the Army Test Center (ATC) and ECBC's Technical Director signed an MOA that established an awesome

partnership – the ECBC Shops and the ATC Shops. The MOA will foster joint bidding of work, co-marketing, and work shifting/sharing. Historically, both shops have focused their services to meet the Army's Test and Evaluation and Research, Development, Test and Evaluation requirements.

The two organizations complement each other very well, with ATC shops engaged primarily in large heavy-gauge steel fabrication efforts and the ECBC Shops most frequently having assignments

that require special, fine machining skills. The MOA also ties the ECBC Rapid Prototyping/Computer Aided Design capabilities into the ATC shops.

Our Experimental Fabrication organization has always been an important part of our capability – providing us with the ability to do very specialized work

and to respond rapidly to project demands. We're doing what it takes to not just preserve, but to enhance, that capability.

POC: Mr. Ronald P. Pojunas, Commercial (410) 436-5596, DSN 584-5596, or email ronald.pojunas@apega.army.mil



COOPERATIVE R&D WITH INDUSTRY AND ACADEMIA

R

ecent significant achievements and actions in our continuing commitment to *technology transfer* follow:

Year-End Executive Summary

In FY99, Edgewood CB Center entered into 17 new Technology Transfer agreements. The program resulted in \$404, 588.00 of income to ECBC, exceeding the \$264, 818.02 collected in FY98. In addition to the income received through this program, a significant leveraging of R&D resources was realized and the Defense Technology Transfer mission was fully accomplished consistent with DOD policy. Through Cooperative Research and Development Agreements (CRADA), Test Service Agreements (TSA), and Patent License Agreements (PLA), ECBC obtained access to private-sector technologies, RD&E services, equipment and facility use, as well as income. Significant advancements were made in FY99 to better market ECBC's capabilities, and many new partnerships were created that will carry over into FY00 and beyond. As of this writing, over \$250K of revenue for FY00 is already earmarked for transfer to ECBC. The work performed in FY99 has provided the foundation for even greater success in FY00.

Northeastern Maryland Technology Council (NMTC)

In cooperation with the Northeastern Maryland Technology Council and Harford & Cecil County Schools, we sponsored tours of the CAD/Rapid Prototyping Facilities, Wind Tunnels, and Experimental Fabrication Shop for 135 students in October. This is the second year for this program, which is designed to help students become interested in technology and science/engineering as a career and seek higher education.

For additional information on the NMTC, visit their web site at www.geosol.com/nmtc/index.htm

Cooperative R&D Agreement (CRADA)

At the Edgewood CB Center, there are three tasks being finalized under a CRADA with Battelle. Two are to be funded imminently.

In October, the Natick Soldier Center representatives attended, by invitation, a rollout ceremony and demonstration of the Boston Fire Department's new Mobile Decontamination Unit. This truck mounted system gives the City of Boston capability to conduct mass decontamination while providing privacy and heated water. The Natick Soldier Center provided Boston with an M80 Portable Water Heater that is incorporated into this mobile unit. The City of Boston has also procured two Small Unit Shower systems, with heating/pumping units, to increase mass decontaminate capability. Our interaction with the City of Boston is conducted under a CRADA.

In October, the Natick Soldier Center hosted a meeting with the Vice President of Business Development, University of Massachusetts, and representatives from each of the campuses. The purpose of the meeting was to identify mutual areas of interest for the definition and design of a MOA in support of the National Protection Center and in collaboration with SBCCOM. We will collaborate in defining a strategic partnership plan to support both the goals and objectives of the NPC as well as SBCCOM and the University of Massachusetts.

Testing Services Agreement (TSA)

Three TSAs were recently signed with Fume Free, Mine Safety Appliances Company, and Survivair.

Patents

Dr. Jerold Bottiger and Mr. Paul Deluca of the Aerosol Sciences Team received a patent for their invention of the Ink Jet Aerosol Generator (IJAG).

The device uses ink jet cartridge technology to produce custom aerosol particles of known composition (e.g., bacteria) and size at any desired rate up to 2000 particles per second. It was invented to address the problem of testing the sensitivity of bioaerosol detection candidates at very low threat levels, a few particles per liter. With support from BIDS, the team has built and distributed more than two dozen of the IJAGs to government and university laboratories involved in the BW agent detection effort.

Capabilities Tour

In September, the Edgewood CB Center hosted a *Capabilities Tour* to provide partners and potential customers a more in-depth understanding of the Center's Chemical Biological (CB) technical expertise and facilities, available to assist in the homeland CB defense arena. The visitors, a mix of Government and contractor personnel, represented the National Defense Preparedness Office; National Institute for Standards and Technology; National Institute of Justice; West Desert Test Center, Dugway Proving Ground; Pine Bluff Arsenal and the Research, Development and Acquisition, Soldier and Biological Chemical Command. Guests were welcomed by Mr. James McKivrigan, Director, Engineering Directorate, ECBC and provided a Research, Development and Acquisition, Soldier and Biological Chemical Command overview prior to venturing out to the field. The tour featured the chambers and laboratories of six ECBC Teams. Hands-on displays were beneficial in the presentation of unique CB penetration, permeation, vapor, aerosol, containment, explosive and collective protection testing capabilities of respirators, protective materials, protective ensembles, detection devices and monitoring systems.

POC: Mr. Roy C. Albert, Office of Research and Technology Applications, DSN 584-4438, commercial (410) 436-4438, email address is roy.albert@sbccom.apgea.army.mil



TECHNICAL INDUSTRIAL LIAISON

The Edgewood CB Center Technical Industrial Liaison Officer arranged for a series of briefings to be conducted by our on-post contractors. The purpose of the briefings is to familiarize the Edgewood workforce with the capabilities of our industry partners who are working here at Edgewood. Hopefully, this exchange of information will help us strengthen these partnerships and make best use of Edgewood's assets. The fifth in the series was by Midwest Research Institute. MRI has expertise and capabilities appropriate for wide range of CB Defense applications. They are currently under contract to the Edgewood CB Center and have several employees working on-post.

Small Business Innovation Research (SBIR)

Continuing Phase II Contracts. \$1,125,000.00 was received for second-year funding on three on-going Phase II contracts.

FY99.2 Phase I. A total of 45 proposals were received on three topics advertised in this solicitation. These proposals were evaluated, and seven proposals have been selected by the Army for contract award. Three of those proposals address the topic "Synthetic Receptors for Reagentless Biosensors." The other four proposals address the topic "Microfabrication Based Biotectors." Actions are underway to award these contracts by 10 December.

FY00 Phase II. We received seven Phase II proposals to continue efforts originally funded as a result of the 98.1 and 99.1 SBIR Solicitations. The proposals were evaluated by a CBD Panel.

Two new Phase II proposals have been selected by the Army for contract award. They are entitled:

Nanode Array Sensor Microchips
OPO Wavelength Tuner

Procurement actions have commenced. A third Phase II proposal, entitled "Field-Portable, Real Time Chemical Analysis System," has been put on a wait-and-see list. Its selection for award will depend upon the magnitude of SBIR funding the Army receives.

FY00.1 SBIR Solicitation. This solicitation opened on 04 Oct. It includes the following eight CBD topics from Edgewood. The solicitation will remain open until 12 Jan.

Miniaturized Sample Preparation Module
Improved Sensitivity for Chemical and Biological Standoff Detection
Detection and Identification of Buried or Concealed BW Agents and Simulants Using Nuclear Quadrupole Resonance Spectroscopy
CB Water Monitor Biological Concentration
Chemical and Biological Water Monitor
Development of a Miniaturized Biological Detector
Development of a Miniaturized Chemical Detector
Chemical Immobilizing Agents for Non-Lethal Applications

It also includes the following three Natick Soldier Center topics:

Chemical Protective Gloves
Chemical Biological Closures
Biological Warfare Agent Deactivating Textile Systems

This is the first time that Natick Soldier Center has formally submitted topics under the SBIR Chemical and Biological Defense Program.

Edgewood POC: Mr. Ronald P. Hinkle, AMSSB-RAS-C, DSN 584-2031

Natick POC: Mr. Gerald Raisanen, AMSSB-REO-S(N), DSN 256-4223

FY00.2 SBIR. The Edgewood CB Center put out a call for topics for the 00.2 DOD SBIR Solicitation, which will open in Jul 00. The Edgewood CB Center was allotted five topics in that solicitation. The SBIR program funds innovative technologies that have both military and commercial applications. Proposed topics were due to our office by December 1st.

Science and Technology Objective (STO)
Defense Technology Objective (DTO)

In September, the Natick Soldier Center conducted a progress review of the Wide Span Airbeam Maintenance Shelter program. This program is an Army STO and a joint DTO with the Air Force. Organizations represented included the Air Force Research Lab, ARL (NASA-Langley), and contractors from five companies working on maturing airbeam technology, overall shelter design, and a rapid inflation system.

POC: Jean Hampel, Natick Soldier Center, DSN 256-4692

INTERNATIONAL COOPERATIVE R&D

NATO

In November, Dr. Joseph DeFrank, Edgewood CB Center, met with Dr. Roland, Dierstsein, Defense Science Agency for NBC Protection, Munster, GE, to attend and chair the tenth meeting of NATO Project Group 31 (PG.31), "Non-Corrosive, Biotechnology-Based Decontaminants for CBW Agents." The PG.31 meeting may include CW agent testing of enzyme-based decontaminants. The technology being developed by PG.31 is of potential critical missions relevance to the Edgewood CB Center.

TTCP Web Site

Visit The Technical Cooperation Program (TTCP) for general information at their web site: <http://www.ttcp.osd.mil>

Bilateral Agreements

Data Exchange Annexes (DEAs)

Mr. Marc Bernier and Mr. Bernard Travaillot from France visited in September, for a pre-coordination meeting for the French Joint Staff led fact finding visit on BW.

Mr. Philippe Adam from France, visited the Edgewood CB Center in October, to attend a technical meeting within the framework of Detection Methods of Chemical Warfare Agents.

Ms. Esther Krasner and 21 others from Israel, will visit SBCCOM/ECBC, 1-4 Feb 00, to attend a Chemical Biological Detection Symposium that will include: Chemical Point Detection, Standoff Detection and Biological Point Detection.

Visits

Mr. Robert Chilcott, United Kingdom, visited the U.S. Army Medical Research Institute of Chemical Defense, Edgewood, MD, in October, to have technical discussions regarding alignment of U.S.

and UK CB Defense Programs. Mr. Chilcott will also be doing work on skin protectants in their laboratory. Mr. Lloyd Roberts was the point of contact for this visit.

Mr. Robert Chilcott, United Kingdom, visited SBCCOM/ECBC, in October, to give a briefing on skin toxicity. Technical discussions took place regarding the alignment of U.S. and UK CB Defense Research Programs. Dr. Harry Salem was the point of contact for this visit.

Mr. Michael C. Douglas and 20 others from the United Kingdom, visited Environmental Technology Group on an intermittent basis from 5 Oct 99 through 4 Oct 00, to continue to provide input/support to current repair and maintenance contract with the U.S. Army. They will also discuss providing a U.S. based operation to provide product support on warranty, repair and maintenance of the GID3/Automatic Chemical Agent Detector and Alarm equipment fielded by the U.S. Army.

A team from the French joint staff visited ECBC in October to gain a better understanding of the current U.S. programs in biological detection. The team was led by GEN Jean Luc Hotier, and consisted of several military and civilian members involved in NBC defense. The team has been tasked with developing a joint service policy regarding all aspects of defense against biological agents. During their visit to Edgewood, the French were provided with a description of the current and next generation biological detection capabilities, including the BIDS, the prototype JBPDS, and the current version of Portal Shield. In addition, a presentation on the current technologies under investigation in our Research and Technology Directorate was provided. This visit was the prelude to a more comprehensive meeting where in depth discussions were held regarding joint collaboration.

A group of 20 Japanese visitors, all members of the JDS, visited SBCCOM in October. This was part of their tour of several U.S. Army, Navy, and

Air Force organizations. The JDS is interested in enhancing the spirit of national defense among the Japanese People, promoting mutual understanding between the people and the Self Defense Forces (SDF) to encourage sound development of the SDF thus contributing to peace and prosperity in Japan. MG Doesburg welcomed the visitors, who were then briefed on the activities of the Edgewood CB Center's Engineering and Research and Technology Directorates, and the Office of the Project Manager for NBC Defense Systems. They were also provided a BIDS Overview and tour. Dr. Baker served as their Point of Contact and Escort Officer.

Dr. Bill White visited the Centre d'Etudes du Bouchet (CEB) in Vert-Le-Petit, France, and the Centre de Recherches du Service de Sante des Armees (CRSSA) in Grenoble. For the last few years, the French delegation has visited Edgewood on even years and the U.S. visits the French facilities on the odd years. Daniel Froment, the head of the Chemistry Department at CEB, served as official host and coordinator of the scientific presentations. At CEB, which is responsible for non-medical CB defense, talks revolved around synthesis of agents, analysis of samples, computational chemistry, detection, and decontamination. At CRSSA, which focuses on medical issues, the meetings consisted of discussions on cholinesterase inhibition, toxicology, and new developments for treating and preventing chemical casualties.

Dr. George Famini visited the Singapore Centre for Chemical Defence (CCD) under the recently signed Information Exchange Annex (IEA) with Singapore (SN). The SN hosts for the visit were Dr. Lee Fook Kay and Dr. Koh Cheng Heng, the Head and Deputy Head, respectively, of CCD. During the visit, a significant amount of time was spent in the CCD laboratories talking to the principal investigators, and seeing what current projects were underway. Key projects at CCD include establishment of CCD as a OPCW certified Treaty Analysis Laboratory, water purification and monitoring, biological detection, novel adsorbents, and new clothing polymers. There was a detailed discussion regarding cooperation in the research leading to the development of a new technology for the monitoring of chemical agents in water. SN has a significant capability in this area, and it was felt that a further cooperation focusing on cooperation in water monitoring was worth taking forward. In addition, the SN MOD and civil defense authorities expressed a great deal of interest in the efforts being undertaken by SBCCOM in CB domestic preparedness training. Further contact is expected relative to both water monitoring and DP training.

POCs: Dr. George R. Famini or Ms. Juanita M. Keesee, International Programs Office, Commercial (410) 436-2552/5376, D S N 5 8 4 - 2 5 5 2 / 5 3 7 6 , e m a i l george.famini@apgea.army.mil or juanita.keesee@apgea.army.mil.

PEOPLE IN THE NEWS

In September, President Clinton approved the winners of the 1999 Presidential Rank Awards. The Department of the Army is proud to announce that 19 Senior Executive Service members won the awards, four in the rank of Distinguished Executive and 15 in the rank of Meritorious Executive. Mr. Michael A. Parker, Deputy to the Commander, U.S. Army Soldier and Biological Chemical Command, was a winner of one of the *Meritorious Executive Presidential Rank Awards*.

ECBC EMPLOYEES RECOGNIZED BY NSA

In October, Ms. Cynthia T. Nickel, Chief, National Security Agency (NSA), Fort George G. Meade, recognized two Edgewood CB Center employees for their contributions to NSA's Limited Production Program. Ms. Nickel presented memorandums of appreciation to Ms. Judith L. Duarte, Engineering Technician, and Mr. Terrence C. Roop, Physical Scientist, both of ECBC's Technical Integration Office. Ms. Duarte and Mr. Roop were commended for their efforts in support of development and implementation of improved production procedures for conformal coating and screwhead coating. Ms. Nickel further indicated that the work of these ECBC employees increased the reproducibility and quality of NSA products and allowed NSA to make significant technical gains.

MERITORIOUS CIVILIAN SERVICE AWARD

In September, Mr. Philip Brandler, Natick Soldier Center's Director, received the Meritorious Civilian Service Award. Mr. Brandler was recognized for his outstanding leadership, professionalism, and dedication. His contributions have improved the survivability, sustainability, mobility, and the quality of life of service men and women. His efforts have resulted in the Center becoming a totally customer-focused organization with an emphasis on high quality products.

IMMC CIVILIAN RECEIVES LEADERSHIP AWARD

As a result of overseeing the establishment and stand-up of the Integrated Materiel Management Center (IMMC), Mr. Patrick Kofalt received an Army commendation for his outstanding leadership. He was recognized for his ability to successfully integrate the logistics elements of the Aviation and Troop Command (ATCOM) in St. Louis, MO, with those of the Natick Soldier Center. He also directed and implemented a new structure to integrate the chemical logistics elements at Rock Island, IL.

ADDITIONAL RECOGNITION

In October, MG John C. Doesburg presented members of SBCCOM's **disABILITY Awareness Team**, with a Commander's Medal. This was a special "Thank You" on behalf of the Commander as a result of the SBCCOM's disABILITY Awareness Team (Cover article) receiving the award as the "Outstanding Disability Awareness Team" in the Army.

Mary Doak received a letter of recognition from the **Office of Emergency Services in Toledo, OH** regarding her work with its city coordinators during the Toledo-Project Training Program. The letter stated that “she demonstrated highly developed leadership skills by keeping team members focused on mission, motivated, and seeking to attain the goal of excellence.”

Paul Schabdach received a letter of recognition from the **Pennsylvania State Police** for a briefing he did for their Nuclear, Biological and Chemical Officers in November.



<i>Upcoming Conferences</i>		
<i>Date and Place</i>	<i>Title</i>	<i>POC</i>
<i>1-3 February 2000 Hyatt Regency Crystal City Arlington, VA</i>	<i>11th Annual SO/LIC Symposium and Exhibition</i>	<i>Mr. Dave Cheney (508) 233-4307 email: dcheney@natick- emh2.army.mil</i>
<i>16-18 February 2000 Fort Lauderdale, FL</i>	<i>Winter AUSA</i>	<i>Mr. Dave Cheney (508) 233-4307 email: dcheney@natick- emh2.army.mil</i>

EDGEWOOD CENTER EXHIBITS AT TECHNOLOGY 2009

They came from around the globe to the Fountainbleau in Miami Beach, FL. Although some would enjoy the beach and the night life, their main objective was to attend Tech East '99, which included the NASA Technology 2009, the Southeast Design and Manufacturing Expo, and the Small Business Tech Expo. Technology 2009 is considered **the** "Engineering Innovation Show."



Edgewood's exhibit showcased our myriad of capabilities in Domestic Preparedness, disaster center development, rapid prototyping, explosive containment, bioprocess engineering, our chemical and biological forensic analytical center, testing facilities, and our analytical glove box system.

There were several seminars and product demonstrations ongoing during the three-day event. An SBIR (Small Business Innovative Research) conference was held concurrently and the SBIR Technology of the Year Award was given on the last day.



This event was indeed a success. Edgewood's exhibit personnel talked with many individuals who were interested in partnering with us. These attendees ranged from fire fighters, law enforcement officers, and scientists to people responsible for designing and manufacturing equipment for people with various disabilities to assist them in leading normal lives.



Super Toxic Analytical Glove Box

POC: Ms. Joann J. Brucksch,
Commercial (410) 436-5383, DSN
5 8 4 - 5 3 8 3 , o r e m a i l
joann.brucksch@sbccom.apgea.army.
mil



SBCCOM'S PROFESSIONAL DEVELOPMENT CONFERENCE

The SBCCOM 5th annual Professional Development Conference, in cooperation with the USDA Graduate School was held on October 28th and focused on the dawn of the 21st Century and the skills needed for success in the workplace. "Marching Into The Millennium: Skills for Success" was the theme.

Major General John C. Doesburg addressed the audience and urged employees to make a commitment to excellence, be open to new ideas, exhibit humility, mentor, and find a balance between work and private life.



Keynote speaker Steve Siemens encouraged positive thinking. "Negative thinking creates clouds, it blows everything out of prospective and it keeps us from enjoying life," he said. Positive attitudes are obtained by looking for them, focusing on what can be controlled, and checking

attitudes daily.

The conference provided two workshops during the day. Melissa Mayers spoke on "Moving Up in a Competitive Environment: How to Take Charge of your Own Career" during which the participants learned that in order to become the person you want to be, you must gather and practice the skills you need now. Virginia Jacobs' topic was "Emotional Intelligence: Your Key to Communication in the Workplace of the Future." She discussed the importance of emotional intelligence in understanding yourself and those with whom you deal. You cannot change another's behavior; but with patience and observation, you can establish a positive communication channel.



Dan Rodricks, columnist with the Baltimore Sun newspaper, talked to the audience during the midday presentation.

He offered some insights into the world of journalism, suggested some writing techniques and a look at the impact of local television broadcasting.

The closing speaker was Michael Aronin who used his topic of "Laughing It Off" to advocate getting past



personal shortcomings and moving on. The audience laughed and cried as Mr. Aronin used comedy and poetry to impart his personal experience with physical challenges for turning obstacles into possibilities.

Through the support of Mr. Joseph Zarzycki, Technical Director of the ECBC, and the conference committee, the conference was a complete success. The SBCCOM committee consisting of Mary Hagy, Barbara Knapp, Donna Brown, Phyllis Ostrom, Patricia Belcher, Emily Fowler, Kay Gilbert, and Chris Hignutt worked with the USDA Graduate School to coordinate this year's event. As in past years, the theme was chosen to provide attendees a day of personal, career, and organizational growth. The conference is always open to the entire SBCCOM workforce.

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Our employees participate in many workshops, symposiums, and conferences; and many are recognized by outside organizations for their exemplary performance. It is our pleasure to share this information.

In September:

Dr. Mohamed Mughal, Domestic Preparedness Office, was invited by the Institute for Defense Analyses (IDA) to present technical information and serve on a technical panel during a conference titled "Biological Warfare: Offense, Defense, Deterrence." The conference was co-sponsored by IDA and the Los Alamos National Laboratory of the Department of Energy.

The Natick Soldier Center's DOD Combat Feeding Team presented a technical briefing and high dose meat entree sampling at the Quartermaster Center and School, Army Center of Excellence, Subsistence' Food Irradiation Symposium. The symposium's objective was to bring the services up to date on current federal and DOD policies regarding the potential adoption of irradiation technology in service garrison and/or field feeding. Efforts to increase education on the benefits of food irradiation will be continued and plans for a commissary market trial in Florida are being made. A second conference is planned for the spring of 2000 to include industry representatives.

Mr. Victor Arca attended the Protective Clothing Conference hosted by Clemson University in Charlotte, NC, to present a paper on protective clothing testing at the Edgewood CB Center. Mr.

Arca's paper discussed the protective clothing needs of Emergency First Responders and highlighted the Man In Simulant Testing (MIST) performed here at the Edgewood MIST Facility of several types of Bunker Gear, along with Quick-Fixes used with the Bunker Gear to improve its chemical protection. The presentation material was well received by the attendees, who ranged from clothing manufacturers to other research scientists.

An invited paper entitled, "Radiometric Linearity in Passive FT-IR Spectrometry," by R.T. Kroutil, R.J. Combs, and R.B. Knapp was presented with a proceedings paper to the Internal Standardization and Calibration Architectures for Chemical Sensors Conference part of the **SPIE International Symposium on Environmental and Industrial Sensing**. The paper demonstrated the importance of radiometric linearity in passive FT-IR open-path monitoring applications relying and extending the 1992 work of Ballard and others. The proceedings paper also documented four methods for assessing linearity.

The Natick Soldier Center participated in DARPA's Soldier Enhancement Workshop. The meeting focused on developing a program to design and build exoskeletons. Natick Soldier Center's presentation consisted of three parts: 1) An overview of the Center's mission for the soldier and how this related to enhancement efforts, 2) A history of exoskeleton work from the 1960s to the present, and 3) An overview of the Load Carriage Optimization STO. Concluding remarks showed the requirements common to the goals of both the DARPA exoskeleton effort and our current work at NSC to improve the soldier's mobility and load carriage capability.

Natick Soldier Center scientists attended the 7th annual **Functional Fillers & Reinforcements '99 Conference** in Atlanta, GA, and gave an invited presentation entitled

“Polymer/Clay Nanocomposites for Packaging Applications.” In addition they participated in the panel discussion entitled “Nanocomposites: Materials of the Next Millennium.” This conference provided an excellent forum for industry and government interactions to facilitate collaborations in nanotechnology and polymer reinforcements that have applicability to lightweight Soldier Systems.

In October:

COL Stephen Reeves, PM NBC Defense Systems visited with Mr. Tim Otter, London, UK, and was a speaker at the NBC(UK) Symposium.

Ms. Regina Ryan, Edgewood CB Center, attended the “Exhibitor Fall Show 99 - America’s #1 Training Conference and Exhibition for Trade Show and Event Marketing Professionals, in Baltimore. She attended the following seminars: The Art of Analysis, Preparation for Completing the CTSM Thesis Project; True Cost of Exhibit Ownership; What’s Your Show Worth? Proven Tools for Measuring Show Results; and The Basics of Exhibit Budgeting. With the completion of these seminars, 22 of the required 28 will be complete. Ms. Ryan will need to complete 6 more classes, plus electives, and then take a 3-hour comprehensive written exam and prepare a thesis project. When successfully completed, she will receive, through the University of San Francisco, notification that she is a Certified Trade Show Marketer.

SBCCOM participated in the **Fall AUSA**, in Washington, DC. Mr. Rick Decker, PM NBC Defense Systems, and Mr. Jeff Smart, SBCCOM Historian, represented the Edgewood campus at the meeting. The PM-Enhanced Soldier Systems also supported the SBCCOM exhibit, providing answers to questions from attendees on the Extreme Cold Weather Clothing System, Interceptor Body Armor, and Joint Service Lightweight Integrated Suit Technology Ensemble.

Mr. Randy Laye attended a conference entitled, “International Perspective and Response to Terrorism and WMD,” in Annapolis MD.

Reference was made by a number of the presenters to the technical work being conducted by SBCCOM under the IRP and Domestic Preparedness Testing programs. Mr. Gary L. Briese, Executive Director of the International Association of Fire Chiefs, shared his insights on ways to get our DP products into the hands of the first responders. We have also received a letter from Mr. Briese expressing his appreciation for our contribution to the community and offering the assistance of the IAFC Director of Communications in further assisting us in “spreading the word.”

The Natick Soldier Center participated in a panel discussion at the **California Peace Officers 1999 Training, Trade Show and Conference**. Panel members were asked to address issues related to Weapons of Mass Destruction Personal Protective Equipment for law enforcement. The conference attracted over 700 attendees.

The Natick Soldier Center hosted the **Terrorism Awareness Conference for Municipal Executives**. The event was attended by 270 Fire, Law Enforcement, Emergency Medical Service and Municipal Executives from across New England. Co-Sponsors were Boston FBI, FEMA, Massachusetts Executive Office of Public Safety, New England State Police Information Network, Massachusetts National Guard and Professional Fire Fighters of Massachusetts. The 1st Military Support Detachment - Rapid Assessment Initial Detection Team displayed their equipment and response capabilities. This event exemplified Natick Soldier Center’s support to the New England states region.

In November:

The **Williamsburg BioProcessing Foundation – Viral Vector & Vaccine Conference 6th International Annual Meeting** sent a formal request to Dr. Charles Wick for a presentation on “Counting and

Characterizing Viruses Using the Integrated Virus Detection System (IVDS).” IVDS is a new physical based technology invented by Dr. Wick, ECBC, and Dr. Anderson of EnVirion. This unique conference showcases some of industry’s most successful efforts and focuses on the latest advances in production, purification, and analytical methods. The invitation was extended as the result of the IVDS advancements in virus purification and counting methodologies that are expected to move this important industry into this pioneering area of viral analysis.

Upcoming Symposium

Dr. Harry Salem, Research and Technology Directorate Chief Scientist for Life Sciences, has been invited to participate in the National Toxicology Program’s Advisory Committee on Alternative Toxicological Methods (ACATM). The ACATM provides advice on the activities and priorities of the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) and the National Toxicology Program Center for the Evaluation of Alternative Toxicological Methods (NICEATM). Dr. Salem is the Department of Defense representative to the ICCVAM.

PEO/DAS/PM Conference, APG, MD (8-9 February 2000): The Developmental Test Center, SBCCOM, and PM Chemical Demilitarization will jointly host this conference. The theme is Army Acquisition Test and Evaluation. There will be a small area for local exhibits.

SO/LIC Conference, Crystal City, VA (1-3 February 2000): This year’s conference focuses on the “Technological and Operational Reality for Conflict in the New Millennium.” SBCCOM will have a rather large exhibit at this event.

Winter AUSA, Fort Lauderdale, FL (16-18 February 2000). The Army Materiel Command (AMC) will have the lead for this event this year. The theme is “Army & Industry: Partners in Military Readiness.” As in years past, SBCCOM will be participating in AMC’s Corporate Exhibit.

The next CB APBI is scheduled for 12-14 September 2000. It will include a two-day APBI followed by an IR&D conference and will be held at Edgewood.



Books, Journals, and Magazine Articles

“Reactions of VX, HD, and Their Simulants with NaY and AgY Zeolites. Desulfurization of VX on AgY” by George W. Wagner and Philip W. Bartram, Edgewood CB Center, was accepted for publication in *Langmuir*. The work describes the room-temperature reactions of VX, HD, O,S-diethyl phenylphosphonothioate (DEPPT), and 2-chloroethyl phenyl sulfide (CEPS) with NaY and silver-exchanged (AgY) zeolites, which were studied by solid state MAS NMR.

“A Thermo-mechanical Instability in the High-Rate Extension of Textile Fibers” was accepted for publication in the *Textile Research Journal*. This paper reveals a phenomenon of localized deformation leading to premature fiber rupture that occurs in the rapid extension of fibers, and possibly in applications such as air-drop systems or body armor. A parameter controlling the onset of this phenomenon is shown to be helpful in tailoring fiber properties to avoid this failure mode. The *Textile Research Journal* is a highly regarded journal with a world-wide scientific circulation.

“Nonintrusive Analysis of Chemical Agent Identification Sets Using a Portable Fiber-Optic Raman Spectrometer,” by Steven Christesen, Brian MacIver, Lawrence Procell, and David Sorrick of the Edgewood CB Center and Michael Carrabba and Job Bello of EIC Laboratories, was published in *Applied Spectroscopy* (Vol. **53**, No. 7, July 1999, pp. 850-855). The article reports that a portable fiber-optic Raman system comprising a diode laser, echelle spectrograph, CCD detector, and filtered fiber-optic probe has been used to analyze chemical agents and other toxic chemicals in sealed glass containers. These containers include ampoules and bottles that are contents of chemical agent identification sets (CAIS) developed for use in training military personnel in chemical agent identification, safe handling, and decontamination. Real-time nonintrusive analysis of these sets is required so that the items containing chemical agents can be identified for proper disposal.

TECHNICAL REPORTS

Published technical reports, when available, should be requested from the Administrator, Defense Technical Information Center, ATTN: DTIC-FDRB, 8725 John J. Kingman Road, Ste 0944, FT Belvoir, VA 22060-6218.

<i>Report No.</i>	<i>Title</i>	<i>Author(s)</i>
ECBC-CR-016	Safeguard II, September 1999, UNCLASSIFIED - limited.	R.Zywicki J. Gillette M. Bowen P. Sigler H. Ha D. Stageberg
ECBC-CR-003	Final Report for the Improved Lightweight Standoff Chemical: Agent Detector (ILSCAD), October 1999, UNCLASSIFIED - limited.	T.G. Quinn
ECBC-CR-008	Characterization of Visible and Infrared Obscurant Particle Size Distribution, October 1999, UNCLASSIFIED - limited.	A.W. Richardson M.R. Perry W.G. Rouse
ECBC-CR-010	Smoke System Performance Model and Cloud Density Visualization Utility, Version 2.0, October 1999, UNCLASSIFIED - limited.	D.J. Johnston W.G. Rouse
ECBC-CR-017	Fate of Chemical Agent in the Atmosphere, Interim Report on Development and Application of Models, October 1999, UNCLASSIFIED - limited.	B. Freeman R. Small S. Rogers
ECBC-CR-018	Aerosol Model Validation, October 1999, UNCLASSIFIED - limited.	B. Freeman A. Wilson S. Rogers
ECBC-CR-019	Fate of Chemical Agent in the Atmosphere: Final Report on Development and Application of Models, UNCLASSIFIED - unlimited.	B. Freeman A. Wilson S. Rogers
ECBC-CR-023	Predicting Adsorption Equilibria of Mixtures: Comparison of Potential Theory and Ideal Adsorption Theory, October 1999, UNCLASSIFIED - public release.	D.T. Croft D.K. Friday
ECBC-CR-024	Particle Size Distribution Measurements of Obscurants Disseminated by the M56 and IR Screening Cartridge, October 1999, UNCLASSIFIED - limited.	A. Richardson W. Rouse M. Perry

ECBC-SP-007	Chemical Agent Accountability Program of the U.S. Army Edgewood Chemical Biological Center, October 1999, UNCLASSIFIED - public release.	W.C. Ng
ECBC-TR-024	Evaluation of a Candidate Solvent for Decontaminating Agent, Multipurpose (DAM): 1. Solubility of Chemical Warfare Agents in Sulfolane and Water Mixtures, October 1999, UNCLASSIFIED - limited.	P.W. Bartram V.D. Henderson
ECBC-TR-028	Design, Fabrication and Performance of Intimate Mixed Terephthalic Acid and Riot Control Agent CS Smoke Grenades, October 1999, UNCLASSIFIED - limited.	G.V. Tracy D.H. Anderson J.A. Domanico
ECBC-TR-058	Literature Review of DNA-Based Subspecies Analysis of Bacillus Anthracis, Burkholderia Pseudomallei, Burkholderia Mallei, and Yersinia Pestis, October 1999, UNCLASSIFIED - public release.	S.P. Harvey
ECBC-TR-059	Man in Simulant Testing of Mark IV and Kappler CPF3 Protective Suits, September 1999, UNCLASSIFIED - public release.	B.D. Cannon V.J. Arca
ECBC-TR-061	Analysis of Bis(2-Chloroethyl) Sulfide (HD) Stored in HD Containers at U.S. Army Soldier and Biological Chemical Command, Ton Container Stockpile Survey, October 1999, UNCLASSIFIED - public release.	E.L. Vickers E.B. Sumpter T.E. Rosso I.D. Swain R.E. Herd
ECBC-TR-062	Decontamination Procedures for the M45 Aircrew Protective Mask, October 1999, UNCLASSIFIED - limited.	J.A. Scavnicky
ECBC-TR-063	Lens Concept for the Joint Service General Purpose Mask, October 1999, UNCLASSIFIED - limited.	C.M. Gove S.E. Chase J.S. Hoffman
ECBC-TR-065	Use of Positive Pressure Ventilation (PPV) Fans to Reduce the Hazards of Entering Chemically Contaminated Buildings, October 1999, UNCLASSIFIED - public release.	V.J. Arca
ECBC-TR-068	Vapor Pressure of VX, November 1999, UNCLASSIFIED - public release.	J.H. Buchanan L.C. Buettner A.B. Butrow D.E. Tevault
ECBC-TR-545	Field Detection of Bacillus Spores with Stand-Alone Pyrolysis - Gas Chromatography Ion Mobility Spectrometry Technology, December 1998,	A.P. Snyder W.M. Masswadeh A. Tripathi

UNCLASSIFIED - limited.

H.L.C. Meuzelaar
J.P. Dworsanski
M-G. Kim

The Headquarters of the U.S. Army Soldier and Biological Chemical Command is located at the Edgewood Area of Aberdeen Proving Ground, Maryland.



Within the SBCCOM RDA Enterprise is the Research, Development and Engineering Center (RDEC). The RDEC consists of the Natick Soldier Center and the Edgewood CB Center. This publication is prepared at the Edgewood CB Center, incorporating CB-related information from the entire RDE Center.



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